Canadian Supply Perspectives: The Oil Sands Future, Arctic Gas, Impacts of Canadian Kyoto Protocol Implementation and North American Trade

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Canadian Supply Perspectives

- Canada is the US’ largest foreign supplier of oil, natural gas and electricity
  - 15% of gross oil imports
  - 14% of total natural gas supply
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Canadian Oil Supply
Location of Deposits
Canadian Supply Perspectives
Canadian Oil Supply

- Declining Western Canada Sedimentary Basin reserves

- Development of
  - Arctic and East Coast Offshore
  - Oil sands
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• Oil Sands (particularly Athabasca deposit)
  • 2.5 trillion barrels - ultimate crude bitumen in place
  • 315 billion barrels - ultimately recoverable with current technology
  • Approximately 2/3 of Saudi Arabian remaining established reserves.
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Canadian Natural Gas

- WCSB - ultimate resource potential - 335 Tcf
- Unconventional (CBM and tight gas) - 75 Tcf
- Ontario and Scotian Shelf - 20 Tcf
- Frontier (Arctic and East Coast - 303 Tcf
- **Total ultimate resource potential** 733 Tcf
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Canadian Natural Gas

• Decline in WCSB production after 2008-2013

• Frontier additions will increase total production to 2017

• US exports - 3 Tcf, projected to peak at 4.6-5 Tcf (approx 18% of US demand) in 2013-2018 period.
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Range of National and Alberta Impacts

National Challenge

GHG Emissions (Megatonnes of CO₂ equivalent)

Revised BAU Forecast (01)

BAU used in the modelling (99)

BAU forecast in 1997

1990 Baseline: 607 Mt

Emission Gap 253 + Mt (31%)

6% below 1990 level: 570 Mt
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1999 Alberta GHG Emissions by Sector
Total Emissions = 205 Mt

- Res/Com.: 7%
- Agric.: 9%
- Power Gen.: 23%
- Fossil Fuel: 34%
- Transport.: 14%
- Industrial: 13%

1999 Rest of Canada GHG Emissions
Total Emissions = 490 Mt

- Com.: 5%
- Other: 5%
- Res.: 9%
- Agric.: 10%
- Power Gen.: 13%
- Fossil Fuel: 8%
- Transport.: 30%
- Industrial: 20%

Source: NRCAN: Canada’s Emissions Outlook: An Update, 2000
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Emissions by Province

Megatonnes of CO₂ equivalent

BC (and TERR) AB SK MB ONT QB NB NS PEI NFLD

1990 1999 2010
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US Investment/Supply

• Kyoto casts shadow on Canada’s ability to supply America - Calgary Herald - December 2002.

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Kyoto Protocol Ratification - Petroleum Industry Response

OIL SANDS PROJECTS

• **Kyoto threatens $4B oil project** - *Calgary Herald, Saturday, September 28, 2002 - A-1*

• **Petrocan rethinks oil sands** - *Report on Business, Thursday, September 26, 2002 - B-1*

• **Kyoto accord casts doubt over Fort Hills project** - *Calgary Herald, Wednesday, November 27, 2002 - D-2*
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The Climate Change “Plans”

Alberta

• Climate Change, Plan of Action, July 2002

• Climate Change and Emissions Management Act, Bill 32, First Reading, November 2002

• Government leadership, energy, conservation, carbon management, renewables, technology and innovation

• Voluntary sectoral agreements based on emissions intensity and emissions trading

• Enhancing carbon sinks particularly CO₂ sequestration in hydrocarbon reservoirs and coal beds

• 50% GHG reduction below 1990 levels by 2020
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The Climate Change “Plans”

Federal - Climate Change Plan, November 2002

• Reduction of 240 Mt from projected “business-as-usual” GHG emissions level in 2010 to meet Kyoto Protocol Commitment

• Step 1 - Actions already underway - government actions, technology and efficiency gains, sinks and offsets and international market, including 25 MT from large industrial emitters. Total: 80 mt

• Step 2 - New Actions - “targeted measures” (information measures, production subsidies, tax measures, etc.) including 55 MT from large industrial emitters) - 100 MT

• Step 3 - The Remainder, including covenants and emissions trading - 60 MT
  • Sectors proposed for emissions intensity - based covenants and emissions trading include oil and gas and thermal electricity generation

• Large Industrial Emitters Cap - 55 MT; $10 per tonne
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Federal - Provincial Conflict

- Potentially competing/conflicting federal and provincial GHG standards, voluntary covenants and emission trading regimes

- Potential constitutional litigation based on

  - Alberta’s natural resource ownership and power to legislate on “exploration . . . development, conservation and management of non-renewable natural resources”, “management and sale of public lands” and “property and civil rights in the province”, and

  - Federal power to legislate on “Peace, Order and Good Government - matters of national concern” and “regulation of trade and commerce” and extra provincial pipelines.
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Northern Natural Gas Pipelines

Possible routes for new northern gas pipeline

Prudhoe-Yukon-Mackenzie Valley

Prudhoe Bay

Prudhoe-offshore-Delta-Mackenzie Valley

Alaska Highway route

Dempster Highway lateral

Alberta

B.C.

Yukon

N.W.T.

Fort Nelson

Inuvik

Norman Wells

Whitehorse

Boundary Lake

St. John

Simpson

N.W.T. Mackenzie Valley pipeline

B.C. Fort Nelson

Yukon Whitehorse

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Northern Natural Gas Pipelines
Prospects and Challenges

- Environmental Impact Assessment and regulatory coordination
- Aboriginal interests
- Role of Environmental NGOs
- Uncertainties - financing; Canadian and US government policy
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Oil and Gas Trade under NAFTA

• NAFTA Energy Chapter - Export taxes, quantitative restrictions and sharing of potential supply shortfalls

• NEB market-based approach to natural gas export regulation

• Chapter 11 investor’s rights
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Conclusions

• WCSB will decline, but major new oil and gas supplies are under development.

• Oil sands production development is key.

• Arctic Pipeline proposals are advanced but environmental, Aboriginal and regulatory process issues remain.

• Kyoto Protocol implementation will impact the Canadian oil and gas industry, particularly oil sands development, but the significance of this for future supply is unclear.

• Canadian public concern remains about perceived “irrevocable sale” of Canadian energy resources as a result of NAFTA energy provisions.